

**Response**

Applicant: Kirk Bresniker et al.

Serial No.: 09/923,976

Filed: August 7, 2001

Docket No.: 10012569-1

Title: SYSTEM AND METHOD FOR GRACEFUL SHUTDOWN OF HOST PROCESSOR CARDS IN A SERVER SYSTEM

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**IN THE CLAIMS**

1.(Original) A host processor card configured to be fitted into a server system, the host processor card comprising:

a processor;

a memory coupled to the processor for storing an operating system;

a power control line for controlling the power state of the host processor card;

a graceful shutdown circuit coupled to the processor and the power control line, the processor configured to provide a graceful shutdown signal to the graceful shutdown circuit, the graceful shutdown circuit configured to allow a graceful shutdown of the host processor card when the power control line indicates that the host processor card is to be powered down if the processor has provided the graceful shutdown signal.

2.(Original) The host processor card of claim 1, wherein the graceful shutdown circuit is configured to allow an immediate shutdown of the host processor card when a received power control signal indicates that the host processor card is to be powered down if the processor has not provided the graceful shutdown signal.

3.(Original) The host processor card of claim 1, wherein the power control line is coupled to a switch that is configured to close when the host processor card is inserted into the server system, causing the power control line to indicate that the host processor card is to be powered up.

4.(Original) The host processor card of claim 3, wherein the switch is configured to open when the host processor card is being removed from the server system, causing the power control line to indicate that the host processor card is to be powered down.

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5.(Original) The host processor card of claim 3 or claim 4, wherein the power control line is coupled to a server management card that is configured to control the power state of the host processor card via the power control line when the switch is closed.

6.(Original) The host processor card of claim 1, wherein the processor includes a register for indicating when a graceful shutdown is to be performed, and wherein the operating system is configured to write a value to the register indicating whether a graceful shutdown is to be performed.

7.(Original) The host processor card of claim 6, wherein the operating system is configured to write a value to the register indicating that a graceful shutdown is to be performed when the operating system boots up to a point that an immediate shutdown should not be performed.

8.(Original) The host processor card of claim 1, wherein the graceful shutdown circuit further comprises a monitor circuit coupled to the power control line and coupled to the processor, the monitor circuit configured to provide an indication of the status of the power control line to the processor.

9.(Original) The host processor card of claim 1, wherein the graceful shutdown circuit further comprises a switch circuit coupled to the power control line and coupled to the processor, the switch circuit configured to override a power down signal on the power control line and thereby maintain power to the host processor card if the processor has provided the graceful shutdown signal to the graceful shutdown circuit.

10.(Original) The host processor card of claim 9, wherein the graceful shutdown circuit further comprises a manual emergency switch coupled to the switch circuit, the emergency switch configured to cause immediate shutdown of the host processor card.

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11.(Original) A graceful shutdown circuit for a host processor card configured to be fitted into a server system, the graceful shutdown circuit comprising:

- a power control line for controlling the power state of the host processor card;
- a monitor circuit for monitoring the state of the power control line, the monitor circuit including a first output configured to be coupled to a processor of the host processor card to indicate the state of the power control line;
- a first input configured to be coupled to a processor of the host processor card, the first input indicating whether a graceful shutdown is to be performed; and
- a switch circuit coupled to the first input and the power control line, the switch circuit configured to maintain power to the host processor card via the power control line when the first input indicates that a graceful shutdown is to be performed.

12.(Original) The graceful shutdown circuit of claim 11, wherein the switch circuit is configured to allow an immediate shutdown of the host processor card when the first input indicates that a graceful shutdown is not required.

13.(Original) The graceful shutdown circuit of claim 11, wherein the graceful shutdown circuit further comprises a manual emergency switch coupled to the switch circuit, the emergency switch configured to cause immediate shutdown of the host processor card.

14.(Original) A method of gracefully shutting down a host processor card in a server system, the method comprising:

- monitoring a power control line that controls the power state of the host processor card;
- providing a graceful shutdown indication from an operating system of the host processor card to a processor of the host processor card when an immediate shutdown of the host processor card should not be performed;
- outputting a graceful shutdown signal from the processor when an immediate shutdown of the host processor card should not be performed;

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overriding the power control line when the processor outputs the graceful shutdown signal, thereby maintaining power to the host processor card; and  
initiating a graceful shutdown of the operating system when the power control line provides a power down signal if the operating system has provided the graceful shutdown indication to the processor.

15.(Original) The method of claim 14, and further comprising:

allowing an immediate shutdown of the host processor card when the power control line provides a power down signal if the operating system has not provided the graceful shutdown indication to the processor.

16.(Original) The method of claim 14, wherein the power control line is coupled to a switch that is configured to close when the host processor card is inserted into the server system, causing the power control line to indicate that the host processor card is to be powered up.

17.(Original) The method of claim 16, wherein the switch is configured to open when the host processor card is being removed from the server system, causing the power control line to indicate that the host processor card is to be powered down.

18.(Original) The method of claim 16 or claim 17, wherein the power control line is coupled to a server management card that is configured to control the power state of the host processor card via the power control line when the switch is closed.

19.(Original) The method of claim 14, wherein the graceful shutdown indication is provided by the operating system by writing a value to a register of the processor.

20.(Original) The method of claim 14, and further comprising:

providing a manual emergency switch for causing an immediate shutdown of the host processor card.